U.S. Environmental Protection Agency
Region 8
Technical and Management Services

Laboratory Services Program

Certificate of Analysis

Ref: 8TMS-L

MEMORANDUM

Date: 10/18/16

Subject: Analytical Results--- **Bonita Peak_Water_SEP_2016_A129**

From: Don Goodrich; EPA Region 8 Analytical Chemistry WAM

To: Rebecca Thomas
Superfund
1595 Wynkoop Street

Received Sample Set(s), [Work Order : Date Received]:
[C160913 : 09/28/2016]

Attached are the analytical results for the samples received from the Bonita Peaks_Water_SEP_2016_A129 sampling event, according to TDF [none]. All analyses were performed within their method specified holding times unless otherwise noted in the following narrative.

These samples were prepared, analyzed, and verified by the Environmental Services Assistance Team Laboratory (ESAT) according to the requirements of the Technical Direction Form (TDF).

Note: The laboratory herewith transmits this deliverable to the program/project partner for determination of "final data usability" which may include data validation and data quality asessment per and in accordance with EPA QA/G-8, *Guidance on Environmental Data Verification and Data Validation*, November 2002, EPA/240/R-02/004. Laboratory data qualifiers are applied based on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* October 2004, referred to as "NFGI".

Laboratory policy is to dispose of any remaining sample 60 days after data analysis packages are delivered to EPA. If you would like the laboratory to retain the samples for a period longer than 60 days, please contact Don Goodrich within the 60 day period at (303) 312-6687.

Case Narrative

C160913

Quality Assessment: Unless indicated by exception, the QA/QC associated with this sample set produced data within the TDF-specified criteria.

Holding Times: All samples were analyzed within their method-specified technical holding time(s).

1. Initial and Continuing calibration blanks (ICBs and CCBs).
   Exceptions: None.
2. Preparation (PB) / Method blanks (MB)
   Exceptions: None.
3. Interference Checks (ICSA / ICSAB) for ICP-MS and ICP-OE analyses only.
   Exceptions: None.
4. Initial and Continuing calibration verification analyses (ICVs, SCVs and CCVs).
   Exceptions: None.
5. Laboratory Control Sample (LCS) or second source analysis or SRM.
   Exceptions: None.
6. Laboratory Fortified blank (LFB) / Blank spike (BS), same source as used for the matrix spikes. PBS performed with analyses/methods requiring preparation or digestion prior to analysis.
   Exceptions: None.
7. Contract Reporting Detection Limit Standard, labeled as CRA, CRDL or CRL.
   Exceptions: None.
8. Laboratory Duplicate (DUP). "Source" identifies field sample duplicated in the laboratory. If either the "source" or the duplicate result is <5X the reporting limit, the %D limit of 20% does not apply.
   Exceptions: None.
9. Laboratory Matrix Spike (MS) and spike duplicate (MSD). "Source" defines original field sample fortified prior to analysis. Percent recovery (%R) limits do not apply when sample concentration(s) exceed the corresponding analyte spike level by a factor of 4 or greater.
   Exceptions: None.
10. Serial Dilution sample analysis (SRD). "Source" is parent field sample diluted 1:5 in the laboratory. Performed for ICP-OE and ICP-MS metals analyses. Percent difference (%D) limits do not apply when analyte concentration(s) are below 50x the source sample's MDL (or 10x it's PQL).
    Exceptions: None.
11. Internal standards, criteria specified for ICP-MS analyses only, monitored at the instrument.
    Exceptions: None.
12. Any calibration using more than two-points produced a correlation coefficient equal to or greater than 0.995.
    Exceptions: None.

Acronyms and Definitions:

ESAT	Environmental Services Assistance Team
J	Data Estimated qualifier (also applied to all data less than PQL, greater than or equal to MDL)
MDL	Method Detection Limit
PQL	Practical Quantitation Limit, also known as reporting limit.
RPD	Relative Percent Difference (difference divided by the mean)
%D	Percent difference, serial dilution criteria unit, difference divided by the original result.
%R	Percent recovery, analyzed (less sample contribution) divided by true value
<	Analyte NOT DETECTED at or above the Method Detection Limit (MDL)
mg/L	Parts per million (millligrams per liter). Solids equivalent = mg/Kg.
ug/L	Parts per billion (micrograms per liter). Solids equivalent = ug/Kg.
NR	No Recovery (matrix spike) - Often seen for calcium/magnesium when their concentration exceeds the spike level by > 4x.
NFGI	*USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review,* October 2004
RE	Sample Re-analysis. Usually seen on raw data and sequences for required sample dilutions due to over-range analytes.
U	Analyte not detected at or above MDL qualifier
D	Diluted value qualifier.

Method(s) Summary:

As defined in the Technical Direction Form (TDF), some or all of the methods listed below were used for the determination of the reported target analytes.

From EPA's *Methods for the Determination of Metals in Environmental Samples* , Supplement I, May 1994, dissolved, total, and/or total recoverable metals were determined by:

- Method 200.7 / 6010B using a PE Optima ICP -OE (ICP).
- Method 200.8 / 6020 using a Perkin -Elmer Elan 6000 ICP-MS.
- Method 200.2 for total recoverable metals (only) dige stion.
- Method 245.1 using a Perkin -Elmer FIMS CVAA (aqueous mercury only).

From *Standard Methods for the Examination of Water and Wastewater* , 18th Edition, 1992, Method 2340B was used for the calculated hardness determination. Hardness is reported as mg (milligram) equivalent $CaCO_3$ per liter (L) determined as follows:

Calculated hardness = 2.497 * (Calcium, mg/L) + 4.118 * (Magnesium, mg/L).

From *EPA's Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW -846*,

- Method 3015A was used for microwave assisted total metals digestion.
- Method 747 3 was used for mercury in solids .

From EPA's *Determination of Inorganic Anions by Ion Chromatography* , Revision 2.1, 1993, Method 300.0 was used to determine the anions.

From EPA's *Methods for Chemical Analysis of Water and Wastes* , March 1983:

- Method 310.1 was followed for the alkalinity determination.
- Method 160.1 was followed for gravimetric total dissolved solids (TDS) determination.
- Method 160.2 was used for gravimetric total suspended sol ids (TSS) determination.
- Method 415.3 was used for total organic carbon (TOC) determination using either an Apollo 9000 or Phoenix 8000 Non-Dispersive IR (NDIR) system. Also known as dissolved organic carbon (DOC) when performed on the dissolved sample fraction.

The quality control procedures listed in the TDF request were utilized by ESAT to verify accuracy of the results and to evaluate any matrix interferences.

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: CC02D **Date / Time Sampled:** 09/27/16 10:58 **Workorder:** C160913
EPA Tag No.: 8-1003 **Matrix:** Water **Lab Number:** C160913-01 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Chloride	< 3.2	U	mg/L	1.6	4	09/28/2016	NP	1609107
EPA 300.0	**Fluoride**	**6.2**		mg/L	0.4	4	09/28/2016	NP	1609107
EPA 300.0	Nitrate as N	< 0.4	U	mg/L	0.2	4	09/28/2016	NP	1609107
EPA 300.0	Nitrite as N	< 0.4	U	mg/L	0.2	4	09/28/2016	NP	1609107
EPA 300.0	**Sulfate as SO4**	**745**		mg/L	4.0	4	09/28/2016	NP	1609107

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: A12 **Date / Time Sampled:** 09/28/16 09:30 **Workorder:** C160913
EPA Tag No.: 8-1003 **Matrix:** Water **Lab Number:** C160913-02 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Chloride	< 1.6	U	mg/L	0.8	2	09/29/2016	NP	1609107
EPA 300.0	**Fluoride**	**1.3**		mg/L	0.2	2	09/29/2016	NP	1609107
EPA 300.0	Nitrate as N	< 0.2	U	mg/L	0.1	2	09/29/2016	NP	1609107
EPA 300.0	Nitrite as N	< 0.2	U	mg/L	0.1	2	09/29/2016	NP	1609107
EPA 300.0	**Sulfate as SO4**	**384**		mg/L	2.0	2	09/29/2016	NP	1609107

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: M12C **Date / Time Sampled:** 09/29/16 08:40 **Workorder:** C160913
EPA Tag No.: 8-1003 **Matrix:** Water **Lab Number:** C160913-03 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Chloride	< 1.6	U	mg/L	0.8	2	09/30/2016	NP	1609107
EPA 300.0	**Fluoride**	**1.0**		mg/L	0.2	2	09/30/2016	NP	1609107
EPA 300.0	Nitrate as N	< 0.2	U	mg/L	0.1	2	09/30/2016	NP	1609107
EPA 300.0	Nitrite as N	< 0.2	U	mg/L	0.1	2	09/30/2016	NP	1609107
EPA 300.0	**Sulfate as SO4**	**392**		mg/L	2.0	2	09/30/2016	NP	1609107

"J" Qualifier indicates an estimated value

Classical Chemistry by EPA/ASTM/APHA Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
ESAT Dionex IC									
Batch 1609107 - No Prep Req			***Water***						**ESAT Dionex IC**
Method Blank (1609107-BLK1)		Dilution Factor: 1				Prepared & Analyzed: 09/28/16			
Fluoride	< 0.1	0.2	mg/L						
Chloride	< 0.4	0.8	"						
Nitrite as N	< 0.05	0.1	"						
Nitrate as N	< 0.05	0.1	"						
Sulfate as SO4	< 1.0	2.0	"						
Method Blank Spike (1609107-BS1)		Dilution Factor: 1				Prepared & Analyzed: 09/28/16			
Fluoride	4.8	0.2	mg/L	5.00		96	90-110		
Chloride	23.7	0.8	"	25.0		95	90-110		
Nitrite as N	4.6	0.1	"	5.00		93	90-110		
Nitrate as N	4.6	0.1	"	5.00		92	90-110		
Sulfate as SO4	23.8	2.0	"	25.0		95	90-110		
Duplicate (1609107-DUP1)		Dilution Factor: 4	**Source: C160913-01**			Prepared & Analyzed: 09/28/16			
Fluoride	6.4	0.8	mg/L		6.2			3	20
Chloride	< 1.6	3.2	"		< 1.6				20
Nitrite as N	< 0.2	0.4	"		< 0.2				20
Nitrate as N	< 0.2	0.4	"		< 0.2				20
Sulfate as SO4	752	8.0	"		745			0.9	20
Matrix Spike (1609107-MS1)		Dilution Factor: 4	**Source: C160913-01**			Prepared & Analyzed: 09/28/16			
Fluoride	25.3	0.8	mg/L	20.0	6.2	95	80-120		
Chloride	96.2	3.2	"	100	< 1.6	96	80-120		
Nitrite as N	19.0	0.4	"	20.0	< 0.2	95	80-120		
Nitrate as N	18.8	0.4	"	20.0	< 0.2	94	80-120		
Sulfate as SO4	841	8.0	"	100	745	96	80-120		

Classical Chemistry by EPA/ASTM/APHA Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1610054 - 1609107			***Water***						**ESAT Dionex IC**
Instrument Blank (1610054-IBL1)		Dilution Factor: 1					Prepared & Analyzed: 09/28/16		
Fluoride	< 0.1	0.2	mg/L						
Chloride	< 0.4	0.8	"						
Nitrite as N	< 0.05	0.1	"						
Nitrate as N	< 0.05	0.1	"						
Sulfate as SO4	< 1.0	2.0	"						

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample .

Project Name: **Bonita Peaks_Water_SEP_2016_A129** **Certificate of Analysis**

TDF #:

TechLaw Inc., ESAT Region 8

INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: EPA 300.0 Analysis Name: WC - Anions by Ion Chromatography

Instrument: **ESAT Dionex IC** Work Order: Nu C160913

Analytical Sequence: 1610054 **Dissolved** Concentration Units: mg/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Fluoride	0.00	1	2	3	4	1609107-BLK1	NA	0.20
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
		0.00						
Chloride	0.00	1	2	3	4	1609107-BLK1	NA	0.80
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
		0.00						
Nitrite as N	0.00	1	2	3	4	1609107-BLK1	NA	0.10
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
		0.00						
Nitrate as N	0.00	1	2	3	4	1609107-BLK1	NA	0.10
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
		0.00						
Sulfate as SO4	0.00	1	2	3	4	1609107-BLK1	NA	2.00
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
		0.00						

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ESAT Dionex IC Method: EPA 300.0 Analysis Name: WC - Anions by Ion Chromatography 2013

Sequence: 1610054 Work Order: C160913 Units: mg/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Chloride	40.0	39.2	98.0		1			2			3	
				40.0	40.0	100.0	40.0	39.8	99.5	40.0	40.5	101.3
					4			5			6	
				40.0	39.2	98.0	40.0	40.6	101.5			
					7			8			9	
Fluoride	4.00	3.9	97.5		1			2			3	
				4.00	4.0	100.0	4.00	4.0	100.0	4.00	4.1	102.5
					4			5			6	
				4.00	3.9	97.5	4.00	4.1	102.5			
					7			8			9	
Nitrate as N	10.0	9.9	99.0		1			2			3	
				10.0	10.1	101.0	10.0	10.1	101.0	10.0	10.2	102.0
					4			5			6	
				10.0	9.9	99.0	10.0	10.3	103.0			
					7			8			9	
Nitrite as N	10.0	9.5	95.0		1			2			3	
				10.0	9.7	97.0	10.0	9.7	97.0	10.0	9.8	98.0
					4			5			6	
				10.0	9.5	95.0	10.0	9.9	99.0			
					7			8			9	
Sulfate as SO4	100	99.3	99.3		1			2			3	
				100	101	101.0	100	101	101.0	100	102	102.0
					4			5			6	
				100	99.2	99.2	100	102	102.0			
					7			8			9	

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

ICP Interference Check Sample

Analyte	Check Sample	Result*	Units	True	%R	PQL
Sequence:	Analysis:					

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

Detection Limit (PQL) Standard

Sequence:

Analyte	True	Found	%R	Units

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: EPA 300.0 **Dissolved** **Sequence ID#:** 1610054

Instrument ID #: ESAT Dionex IC Water **LSR #:**

Analysis ID	Sample Name	Analysis Date	Analysis Time
1610054-ICV1	Initial Cal Check	09/28/16	14:33
1610054-ICB1	Initial Cal Blank	09/28/16	14:48
1610054-SCV1	Secondary Cal Check	09/28/16	15:04
1610054-IBL1	Instrument Blank	09/28/16	15:19
1609107-BS1	Blank Spike	09/28/16	15:34
1609107-BLK1	Blank	09/28/16	15:49
C160913-01	CC02D	09/28/16	16:04
1609107-DUP1	Duplicate	09/28/16	16:19
1609107-MS1	Matrix Spike	09/28/16	16:34
1610054-CCV1	Calibration Check	09/28/16	16:49
1610054-CCB1	Calibration Blank	09/28/16	17:04
1610054-CCV2	Calibration Check	09/29/16	13:29
1610054-CCB2	Calibration Blank	09/29/16	13:44
C160913-02	A12	09/29/16	14:06
1610054-CCV3	Calibration Check	09/29/16	14:21
1610054-CCB3	Calibration Blank	09/29/16	14:36
1610054-CCV4	Calibration Check	09/30/16	09:18
1610054-CCB4	Calibration Blank	09/30/16	09:33
C160913-03	M12C	09/30/16	11:03
1610054-CCV5	Calibration Check	09/30/16	12:49
1610054-CCB5	Calibration Blank	09/30/16	13:04

TechLaw
ESAT Region 8 Laboratory
16194 W 45th Drive
Golden, CO 80403
303.312.7702

US EPA CLP
Chain-of-Custody

EVENT: COC Template

Sample #	Tag	Location	Sub Location	Sample Type	Collection	Matrix	Analyses	Preservation	Sample Date	Sample Time	Remarks	Sampler
CC02D		CC02D	CC02D	Water	Grab	Water	Anions	<4°	09/27/16	1058		Mark Mikos
										MT 09/27/16		

Sampling/Analysis Notes:

Relinquished By (DATE/TIME):

09/27/16 1:30pm

Received By (DATE/TIME):

9/28/16 9:50

Cooler Temp:_____

ICE: Y N
pH: Y N
Cust. Seals: Y N
COC/Labels Agree: Y N
Containers Intact: Y N

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ESAT Region 8 Laboratory
16194 W 45th Drive
Golden, CO 80403
303.312.7702

US EPA CLP
Chain-of-Custody

EVENT: COC Template

Sample #	Tag	Location	Sub Location	Sample Type	Collection	Matrix	Analyses	Preservation	Sample Date	Sample Time	Remarks	Sampler
~~M12C~~		~~M12C~~	~~M12C~~	~~Water~~	~~Grab~~	~~Water~~	~~Anions~~	~~<4°C~~	NT 09/28/16			
A12		A12	A12	Water	Grab	Water	Anions	<4°C	09/28/16	930 am		NT

Relinquished By (DATE/TIME):

[signature] 09/28/16 1:30 pm

Received By (DATE/TIME):

[signature] 9/29/16 10:00

<u>Sampling/Analysis Notes:</u>

Cooler Temp:__________

ICE: Y N

pH: Y N

Cust. Seals: Y N

COC/Labels Agree: Y N

Containers Intact: Y N

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ESAT Region 8 Laboratory
16194 W 45th Drive
Golden, CO 80403
303.312.7702

US EPA CLP
Chain-of-Custody

EVENT: COC Template

Sample #	Tag	Location	Sub Location	Sample Type	Collection	Matrix	Analyses	Preservation	Sample Date	Sample Time	Remarks	Sampler
M12C		M12C	M12C	Water	Grab	Water	Anions	4°C	09/29/16	840		IB

Sampling/Analysis Notes:

Cooler Temp:_____
ICE: Y N
pH: Y N
Cust. Seals: Y N
COC/Labels Agree: Y N
Containers Intact: Y N

Relinquished By (DATE/TIME):

2:30 pm 09/29/16

Received By (DATE/TIME):

9/30/16 10:30

TechLaw
Quality & Integrity

Sample Receipt Form - TLF-51.01

Project: Bonita Peak **TDF #:** A-129

Date Received: 9/28/16 **Time Received:** 9:50 **By:** Jessica Boyles

1	Airbill/shipping documents present?	Drop Off	Yes	No
2	Custody seals on **shipping** containers present and intact?	None	Yes	No
3	Custody seals on **sample** containers present and intact?	None	Yes	No
4	Chain of Custody (COC) present?		Yes	No
5	COC and sample container information agree?		Yes	No
6	Aqueous samples preserved correctly, if required?	N/A	Yes	No
7	Samples received within holding times for requested analyses?		Yes	No
8	Sufficient sample volume for requested analyses?		Yes	No
9	Sample containers intact and not leaking?		Yes	No
10	Sample containers appropriate for requested analyses?		Yes	No
11	Samples shipped on ice?		Yes	No
12	Cooler temperature(s) ≤ 6.0 °C?	N/A	Yes	No

Cooler #:	1	2	3	4	5
Temperature (°C):	4.8				

pH Strip Lot #: HC123184

Preservation Name and Lot #: NA

Comments and Additional Information: NA

Client notified of anomalies, if necessary?	N/A	Yes	No
Anomalies noted in case narrative and data qualified, if necessary ?	N/A	Yes	No

TechLaw

Sample Receipt Form - TLF-51.01

Project: Bonita Peak **TDF #:** A-129

Date Received: 9/29/16 **Time Received:** 10:00 **By:** Jessica Boyles

1	Airbill/shipping documents present?	Drop Off	Yes	No
2	Custody seals on **shipping** containers present and intact?	None	Yes	No
3	Custody seals on **sample** containers present and intact?	None	Yes	No
4	Chain of Custody (COC) present?		Yes	No
5	COC and sample container information agree?		Yes	No
6	Aqueous samples preserved correctly, if required?	N/A	Yes	No
7	Samples received within holding times for requested analyses?		Yes	No
8	Sufficient sample volume for requested analyses?		Yes	No
9	Sample containers intact and not leaking?		Yes	No
10	Sample containers appropriate for requested analyses?		Yes	No
11	Samples shipped on ice?		Yes	No
12	Cooler temperature(s) ≤ 6.0 °C?	N/A	Yes	No

	1	2	3	4	5
Cooler #:					
Temperature (°C):	4.8				

pH Strip Lot #: HC123184

Preservation Name and Lot #: NA

Comments and Additional Information: NA

Client notified of anomalies, if necessary?	N/A	Yes	No
Anomalies noted in case narrative and data qualified, if necessary ?	N/A	Yes	No

TechLaw
Quality & Integrity

Sample Receipt Form - TLF-51.01

Project: Bonita Peak **TDF #:** A-129

Date Received: 9/30/16 **Time Received:** 10:30 **By:** Jessica Boyles

1	Airbill/shipping documents present?	Drop Off	Yes	No
2	Custody seals on **shipping** containers present and intact?	None	Yes	No
3	Custody seals on **sample** containers present and intact?	None	Yes	No
4	Chain of Custody (COC) present?		Yes	No
5	COC and sample container information agree?		Yes	No
6	Aqueous samples preserved correctly, if required?	N/A	Yes	No
7	Samples received within holding times for requested analyses?		Yes	No
8	Sufficient sample volume for requested analyses?		Yes	No
9	Sample containers intact and not leaking?		Yes	No
10	Sample containers appropriate for requested analyses?		Yes	No
11	Samples shipped on ice?		Yes	No
12	Cooler temperature(s) ≤ 6.0 °C?	N/A	Yes	No

Cooler #:	1	2	3	4	5
Temperature (°C):	5.6				

pH Strip Lot #: HC123184

Preservation Name and Lot #: NA

Comments and Additional Information: NA

Client notified of anomalies, if necessary?	N/A	Yes	No
Anomalies noted in case narrative and data qualified, if necessary ?	N/A	Yes	No

C160913

ESAT Technical Direction Form

Contract No. EPW13028
EPA Region 8

Site ID: A8M5	***Date Issued:*** 9/15/2016	***Date***
TDF ID: A-129	***Date Updated:*** 9/15/2016	***Closed By:***

Name: Bonita Peak 2016 Eco Risk Analytical Support

Details: The Contractor shall analyze several water, sediment and tissues samples as part of the ecological risk assessment at the Bonita Peak Mining District Superfund site. The water samples will be analyzed for the following as indicated on the COCs:

Dissolved (including hardness) and Total Recoverable Metals (ESAT)
Total Chromium (ESAT)
Total Uranium (ESAT)
Anions (ESAT)
Nitrate (ESAT)
Nitrite (ESAT)
Cyanide (CLP)
Dioxins/Furans (CLP)
Semivolatiles (CLP)
Pesticides (CLP)
Aroclors (CLP)
Hexavalent Chromium (Sub)
Radium 226/228 (Sub)
Gross Alpha and Gross Beta (Sub)
Isotopic Uranium (Sub)
Nitrogen, Total Kjeldahl (Sub)
Nitrogen, Ammonia (Sub)

The sediment samples will be analyzed for the following as indicated on the COCs:

Total Metals using same analyte list reported for the waters (ESAT)
Mercury (ESAT)
Total Thallium (ESAT)
Total Uranium (ESAT)
Cyanide (CLP)
Dioxins/Furans (CLP)
Semivolatiles (CLP)
Aroclors (CLP)
Pesticides (CLP)
Radium 226/228 (Sub)
Gross Alpha and Gross Beta (Sub)
Isotopic Uranium (Sub)
Nitrate (Sub)
Nitrite (Sub)

The tissue samples will be analyzed for the following as indicated on the COCs:

Total Metals using same analyte list reported for the waters (ESAT)
Mercury (ESAT)

All the samples designated for the CLP will be processed per the CLP Laboratory Assignment for Case 46488. The CLP Laboratory Assignment will be sent to ESAT by Don Goodrich or SMO/CLP approximately 1-2 weeks prior to the sampling event.

Site RPMs are Rebecca Thomas and Jamie Miller

TO02/Subtask 02b: Inorganic Chemistry
TO02/Subtask 02i: Non-standard Analyses

Analytical Information:

MATRIX

☑ Water ☑ Soils ☐ Vegetation ☐ Biota

WET CHEM

☐ TSS ☐ TDS ☐ DOC ☐ Alk ☑ Chloride ☑ Sulfate ☑ Fluoride ☑ Nitrate ☑ Nitrite
Other ***report as separate NO3 and NO2 with short holding times***

METALS

☑ Dissolved ☑ Total Recoverable ☑ Total ☑ Hardness (Calc)

200.7: ☐ Ag ☑ Al ☐ As ☐ Ba ☐ Be ☐ B ☑ Ca ☐ Cd ☐ Co ☐ Cr ☐ Cu ☑ Fe ☐ K ☑ Mg
☐ Mn ☐ Mo ☐ Na ☐ Ni ☐ Pb ☐ Sb ☐ Se ☑ Sr ☐ Ti ☐ Tl ☐ V ☐ Zn ☑ SiO2

200.8: ☑ Ag ☐ Al ☑ As ☐ Ba ☑ Be ☑ Cd ☐ Co ☑ Cr ☑ Cu ☑ Mn ☐ Mo ☑ Ni ☑ Pb ☑ Sb
☑ Se ☐ Th ☑ Tl ☑ U ☐ V ☑ Zn

7470/7471/747 ☑ Hg

FIBERS

☐ PLM ☐ TEM

Deliverables

ID	*Description*	*Due Date*	*Submission Date*
1	Provide final deliverable package to Task Monitor no later than 45 days after delivery of final sample(s).		
2	Provide final deliverable package to Task Monitor no later than 45 days after delivery of final sample(s).		
3	Provide final deliverable package to Task Monitor no later than 45 days after delivery of final sample(s).		
4	Provide final deliverable package to Task Monitor no later than 45 days after delivery of final sample(s).		
5	Provide final deliverable package to Task Monitor no later than 45 days after delivery of final sample(s).		

TLF-07.01	SOP: QAQ-04.00	Eff. Date: 1/17/2007

ESAT Region 8

Final Report Review Form

LIMS: L160913	Project: Bonita Peak_Water_Sep 2016
TDF: A-129	Due Date: 9/25/2016

QA/QC Review – Level III

Compare TDF to performed analysis / Ensure all analyses are complete	☒ Yes ☐ No
Review each Analytical Data Review form noting discrepancies for narrative	☒ Yes ☐ No
Examine each analytical sequence in LIMS using Data Entry Review application	☒ Yes ☐ No
Generate draft report, print QC section	☒ Yes ☐ No
Confirm presence of each analytical batch, QC samples	☒ Yes ☐ No
Examine analytical results (Form I) for accuracy and completeness	☒ Yes ☐ No
Check spike recoveries of LCSs, matrix spikes and post-digestion spikes	☒ Yes ☐ No
Verify serial dilution %D and duplicate RPD for each metals batch	☒ Yes ☐ No

Narrative Comments

Done.

Review By:	Date: 10-17-2016

ESAT Management Review – Level IV

All analytical data and deliverable review forms present and complete	☐ Yes ☐ No
COC copy, received temp. noted, preservatives noted, signature present, holding times met	☐ Yes ☐ No
Copy of TDF present, Analytical requirements met	☐ Yes ☐ No
Case narrative checked for spelling, grammar, technical content and completeness	☐ Yes ☐ No
10% Validation of raw data to reported data on Form Ones	☐ Yes ☐ No
Standard Traceability COAs and ICP / ICP-MS MDL forms present	☐ Yes ☐ No
Final Report cover letter including DCN present	☐ Yes ☐ No
Deficiencies noted requiring correction before delivery to EPA Project Officer	☐ Yes ☐ No

Manager Review Comments

Review By:	Date:
Corrections By:	Date: